

Mineral Industry Surveys

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NICKEL IN JUNE 2004

Reported domestic consumption in June, on a daily average basis, was 3% greater than that of May, according to the U.S. Geological Survey. Consumption for the first half of 2004 was 8% greater than that for the first half of 2003. Average daily nickel consumption of cathode, pellets, briquets, powder, and ferronickel for stainless steel was 72.5 metric tons per day (t/d)—4% greater than the 69.7 t/d (revised) for May 2004 and 37% greater than the 53.0 t/d (revised) for June 2003. Consumption of >99.8% nickel metal to make superalloys (like INCONEL 718 and WASPALOY) increased 8% from revised May levels, on a daily average basis. Consumption to make corrosion-resistant, less stress-resistant nickel-base alloys (like INCONEL 600 and Nickel 200) increased by 6%. Sales to plating companies averaged 30.7 t/d, about 5% less than the May sales figure of 32.4 t/d.

On June 30, U.S. consumer stocks of cathode, pellets, briquets, and powder totaled 1,450 metric tons (t)—7% greater than the 1,360 t (revised) on May 31 and 4% greater than the 1,390 t reported for yearend 2003. Stocks in London Metal Exchange (LME) warehouses worldwide totaled 8,394 t on June 30—27% less than the 11,442 t on May 31. Data collected by the International Nickel Study Group indicated that, at the end of May, world nickel producers (excluding those in Austria, China, The Former Yugoslav Republic of Macedonia, Serbia, and the Ural area of Russia) had 102,900 t of nickel (Ni) in primary products in stock.

The United States imported 56,100 t of primary nickel in the first 5 months of 2004, slightly less than the 56,600 t for the corresponding period of 2003. Trade data for June will appear in a subsequent report.

Turkey—Trial heap leaching to begin at Caldag

European Nickel plc was formed in June 2000 to acquire and develop nickel laterite deposits in the Balkans. Much of the initial work involved reevaluating known nickel deposits in Albania that might be amenable to heap leaching with sulfuric acid at atmospheric pressure. In March 2002, the company optioned the Caldag laterite deposit in western Turkey. The Caldag nickel deposit is 15 kilometers (km) north of the town of

Turgutlu and 75 km northeast of the port of Izmir. The laterite deposit has 38 million metric tons of resources grading 1.14% Ni and 0.05% cobalt. Caldag is one of a number of subtropical laterites that occur in a broad belt of Jurassic-Lower Cretaceous ophiolite complexes that extends from Serbia southeast through Greece and Turkey to Cyprus and Syria (European Nickel plc, 2004).

On June 28, 2004, European Nickel announced that it had acquired full mineral rights to Caldag. A rail line, highway, water, and electric power are available at or near the mine site. In July, the Government of Turkey issued an environmental license to the British company, allowing it to begin heap leaching on a trial basis. The Government also has given European Nickel a foreign investment certificate that exempts the company from import duties and value added tax (VAT) payments on capital goods used in the leaching trials. Local residents also have approved the project.

If the trials are successful, European Nickel will begin a bankable feasibility study in mid-2005 to determine if the project can be scaled up to produce 15,000 metric tons per year of nickel in a mixed nickel-cobalt hydroxide product. Mining has already begun and much of the leach pad construction has been completed. European Nickel has begun construction of the first of three pads, each holding 5,000 t of ore. Irrigation of the heaped ore with sulfuric acid was to begin in late September.

In 2003, European Nickel shipped some 40,000 t of ore to ferronickel producers in Greece and Macedonia. If the Turkish operation is successful, the company will explore the possibility of developing similar operations in other regions of the ophiolite belt—possibly in Albania, Greece, or Macedonia. The company reportedly has examined eight other deposits in the Balkans.

On March 31, European Nickel was listed on AIM—the London Stock Exchange's international market for smaller, growth companies.

Internet Reference Cited

European Nickel plc, 2004, The Çaldağ Project, accessed September 7, 2004, via URL <http://www.enickel.co.uk>.

TABLE 1
CONSUMPTION OF NICKEL (EXCLUSIVE OF SCRAP), BY FORM AND USE¹

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total	Total year to date
2003:					
June	4,130	498	43	4,670	30,400
July	4,240	900	25	5,170	35,600
August	4,320	873	28	5,220	40,800
September	4,320	844	28	5,190	46,000
October	4,840	911	32	5,780	51,800
November	4,420	1,190	30	5,640	57,400
December	4,130	902	30	5,060	62,500
January-December	53,400	8,620	412	62,500	XX
2004:					
January	4,290	595	34	4,920	4,920
February	4,940	455	26	5,420	10,300
March	5,010	529	34	5,580	15,900
April	4,660	458	52 ^r	5,170 ^r	21,100 ^r
May ^r	5,250	528	27	5,810	26,900
June:					
Steel:					
Stainless and heat resisting	1,620	556	W	2,170	12,100
Alloy (excludes stainless)	W	--	--	W	W
Superalloys	1,100	--	W	1,100	5,810
Copper-nickel alloys	W	--	--	W	W
Electric, magnetic, and expansion alloys	12	--	--	12	67
Other nickel & nickel alloys	W	--	W	W	W
Cast iron	W	--	--	W	W
Electroplating (sales to platers)	920	--	--	920	5,480
Chemical and chemical uses	W	--	--	W	W
Other uses	1,550	--	39	1,590	9,260
Total reported	5,210 ²	556	39	5,800	32,700
Total all companies (calc) ³	XX	XX	XX	10,100	57,400
2004: January-June	29,400	3,120	212	32,700	XX
2003: January-June	27,200	2,990	240	30,400	XX

^rRevised. W Withheld to avoid disclosing company proprietary data; included in "Other uses" category. XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Of consumption, 4,200 metric tons were consumed as cathodes and pellets, the remainder as briquets and powder.

³Figures represent calculated apparent consumption; based on the revised proportion of reported primary consumption (56.93%) to apparent primary consumption for 2002.

TABLE 2
ENDING STOCKS OF NICKEL (EXCLUSIVE OF SCRAP) HELD BY CONSUMERS, BY FORM AND USE ^{1,2}
(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total
2003:				
June	1,800	102	73	1,970
July	1,480	91	57	1,630
August	1,670	140	51	1,860
September	1,280	99	52	1,430
October	1,360	109	60	1,530
November	1,410	227	59	1,690
December	1,390	260	46	1,700
2004:				
January	1,390	186	55	1,630
February	1,660	111	44	1,810
March	1,630	108	40	1,780
April	1,760 ^r	227	34	2,020 ^r
May	1,360 ^r	158	42	1,560 ^r
June:				
Steel (stainless, heat resisting and alloy)	430	165	(3)	595
Nonferrous alloys ⁴	999	(3)	(3)	999
Foundry (cast irons)	(3)	(3)	--	(3)
Chemical (catalysts, ceramics, plating salt, etc.) and unspecified uses	17	20	46	83
Total	1,450	185	46	1,680

^rRevised. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Stocks held by companies that consume nickel in more than one end use category are credited to the major category. Stocks are subject to revisions owing to inventory adjustments.

³Included in the "Chemical and unspecified uses" category.

⁴Includes superalloys, nickel-copper and copper-nickel alloys, permanent magnet alloys, and other nickel alloys.

TABLE 3
CONSUMPTION AND ENDING STOCKS OF PURCHASED SECONDARY NICKEL, BY USE¹
(Metric tons, nickel content)

Period	Consumption			Stocks		
	Ferrous scrap ²	Nonferrous scrap ³	Total scrap	Ferrous scrap ²	Nonferrous scrap ³	Total scrap
2003:						
June	4,030	639 ^r	4,670 ^r	3,100	109	3,210
July	4,340	676 ^r	5,010 ^r	3,370	105	3,480
August	4,770	749 ^r	5,520 ^r	3,310	115	3,430
September	3,810	732 ^r	4,540 ^r	3,290	108	3,400
October	5,350	756 ^r	6,110 ^r	3,110	101	3,210
November	4,960	668 ^r	5,620 ^r	2,950	97	3,050
December	4,930	647 ^r	5,580 ^r	2,810	85	2,900
January-December	57,600	8,330 ^r	65,900 ^r	XX	XX	XX
2004:						
January	5,050	684 ^r	5,740 ^r	2,700	73	2,770
February	4,780	694 ^r	5,480 ^r	2,710	79	2,790
March	5,520	923 ^r	6,440 ^r	3,270	80	3,350
April	5,280	851 ^r	6,130 ^r	2,950	82	3,030
May	5,210	787 ^r	6,000 ^r	2,730	63	2,790
June	5,090	790	5,880	2,750	85	2,830
January-June	30,900	4,730	35,700	XX	XX	XX

^rRevised. XX Not applicable.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Nickel content is calculated from an average nickel content and the reported gross weight of scrap.

³Combined consumption and stocks of aluminum-base, copper-base, and nickel-base scrap.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF NICKEL, BY COUNTRY¹

(Metric tons, nickel content)²

Period and country of origin	Cathodes pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total ³	Total year to date ⁴	Wrought nickel
2003:										
May	6,160	933	1,530	7	412	461	378	9,880	60,800	37
June	10,800	368	692	(5)	226	408	327	12,800	73,600	41
July	6,240	294	1,840	11	352	420	312	9,470	83,000	49
August	7,420	762	913	(5)	477	475	544	10,600	93,600	62
September	9,990	1,030	1,180	(5)	570	744	248	13,800	107,000	48
October	7,270	565	1,010	20	326	715	255	10,200	118,000	34
November	7,030	625	932	--	318	889	324	10,100	128,000	28
December	6,230	860	471	(5)	530	821	284	9,190	137,000	34
January-December	99,300	9,130	13,100	90	4,790	6,690	3,790	137,000	XX	660
2004:										
January	7,360	829	1,040	40	489	933	435	11,100	11,100	77
February	7,200	834	1,070	161	667	1,020	485	11,400	22,600	49
March	10,700	812	806	134	1,430	1,660	376	15,900	38,400	72
April	10,700	720	1,680	23	574	908	296	14,900	53,400	53
May:										
Australia	478	--	--	--	--	--	--	478	4,650	--
Brazil	--	--	--	--	21	13	--	34	1,200	--
Canada	4,540	340	--	--	288	436	--	5,600	29,500	--
Colombia	--	--	91	--	--	3	--	94	1,190	--
Dominican Republic	--	--	750	--	--	--	--	750	3,440	--
Finland	564	40	--	--	--	1	179	784	3,320	--
France	59	--	--	--	47	--	4	110	943	--
Germany	2	3	--	--	31	--	39	75	1,100	13
Japan	--	3	--	--	15	--	50	68	386	18
Mexico	--	--	--	--	9	133	3	145	1,160	--
New Caledonia	--	--	100	--	--	--	--	100	450	--
Norway	1,150	--	--	--	--	--	--	1,150	5,090	--
Russia	1,480	80	--	--	--	--	--	1,560	8,200	--
South Africa	20	40	--	--	--	--	--	60	439	--
Sweden	--	2	--	--	--	--	--	2	29	--
United Kingdom	137	48	--	--	201	1	3	390	1,670	(5)
Venezuela	--	--	--	--	--	12	--	12	317	--
Zimbabwe	60	--	--	--	--	--	--	60	421	--
Other	40	8	--	--	86	81	103	318	1,680	24
Total	8,530	564	941	--	698	680	381	11,800	65,200	55
2004: January-May	44,500	3,760	5,530	357	3,860	5,200	1,980	65,200	XX	306
2003: January-May	44,300	4,630	6,060	60	1,990	2,220	1,500	60,800	XX	362

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemicals category includes chlorides (25%); sulfates (22%); other salts (22%); supported catalysts (22%); and oxide, sesquioxide, and hydroxide (65%).

³Excludes wrought nickel.

⁴May include revisions for prior months.

⁵Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 5
U.S. EXPORTS OF NICKEL, BY COUNTRY¹

(Metric tons, nickel content)²

Period and country of destination	Cathodes pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total ³	Total year to date	Wrought nickel
2003:										
May	30	59	11	11	836	2,380	379	3,710	25,200	147
June	90	47	29	33	516	2,310	276	3,300	28,500	143
July	87	95	27	2	510	3,570	393	4,690	33,200	148
August	56	77	37	1	792	3,040	301	4,300	37,500	162
September	107	106	18	51	707	2,350	223	3,560	41,100	148
October	133	153	12	4	1,010	3,270	276	4,850	45,900	141
November	210	127	1	5	819	1,600	371	3,130	49,000	102
December	44	92	10	4	809	3,190	441	4,590	53,600	72
January-December	996	1,100	181	161	9,460	37,800	3,900	53,600	XX	2,890
2004:										
January	52	129	15	5	657	2,370	399	3,630	3,630	153
February	85	166	--	17	540	2,550	396	3,750	7,380	54
March	116	150	(4)	8	1,000	3,800	497	5,570	12,900	59
April	144	132	3	8	1,070	2,660	563	4,570	17,500	227
May:										
Australia	--	1	--	--	--	--	--	1	6	1
Belgium	--	17	--	--	--	3	(4)	20	154	--
Canada	1	20	--	--	1,140	119	142	1,430	5,910	8
China	--	(4)	--	--	--	771	22	793	3,350	10
Finland	--	--	--	--	--	547	(4)	547	2,050	--
Germany	--	11	(4)	(4)	--	257	7	275	381	8
India	--	2	--	--	--	269	--	271	625	(4)
Italy	--	(4)	--	--	--	5	--	5	31	--
Japan	--	2	--	2	20	30	7	61	435	5
Korea, Republic of	--	13	--	--	--	253	20	286	4,500	4
Mexico	14	3	--	--	--	5	9	31	468	48
Netherlands	--	(4)	20	--	--	334	3	357	591	(4)
South Africa	--	1	--	--	7	--	--	8	25	--
Spain	--	--	--	--	--	--	--	--	(4)	--
Sweden	--	--	--	--	32	--	--	32	134	--
Taiwan	2	5	--	--	--	359	12	378	1,660	2
United Kingdom	--	9	3	1	11	26	--	50	334	5
Other	37	43	--	1	72	123	101	378	1,790	29
Total	54	127	23	4	1,280	3,100	323	4,920	22,400	120
2004:January-May	453	704	40	41	4,550	14,500	2,180	22,400	XX	613
2003:January-May	270	399	48	61	4,300	18,500	1,620	25,200	XX	1,970

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemicals category includes chlorides (25%); sulfates (22%); other salts (22%); supported catalysts (22%); and oxide, sesquioxide, and hydroxide (65%).

³Excludes wrought nickel.

⁴Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF NICKEL ALLOYS, BY COUNTRY¹

(Metric tons, gross weight)

Period and country of origin	Unwrought alloyed ingot	Bars, rods and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date
2003:									
May	181	204	504	328	7	206	195	1,630	7,580
June	150	156	579	244	35	292	102	1,560	9,140
July	130	266	554	277	30	305	168	1,730	10,900
August	151	78	469	319	32	322	154	1,530	12,400
September	48	239	406	211	10	115	95	1,120	13,500
October	204	307	443	305	15	162	95	1,530	15,000
November	195	239	331	210	23	89	156	1,240	16,300
December	314	169	388	215	45	704	147	1,980	18,300
January-December	1,910	2,520	5,750	3,330	214	2,770	1,770	18,300	XX
2004:									
January	102	278	286	193	14	134	133	1,140	1,140
February	165	214	362	251	8	374	238	1,610	2,750
March	102	167	446	213	18	363	459	1,770	4,520
April	345	255 ²	504	164	44 ²	773 ²	172	2,260	6,770
May:									
Australia	32	--	--	--	--	--	(2)	32	281
Belgium	--	--	(2)	--	--	12	(2)	12	63
Canada	(2)	(2)	2	--	--	10	7	19	101
China	--	1	--	(2)	--	--	38	39	155
France	--	--	146	12	--	13	7	178	643
Germany	32	101	173	115	14	126	1	562	3,000
Italy	--	106	--	--	--	--	(2)	106	782
Japan	--	--	7	1	--	18	(2)	26	535
Mexico	--	--	--	--	--	--	22	22	255
Netherlands	--	--	--	(2)	--	--	17	17	89
South Africa	20	--	--	--	--	--	--	20	144
Sweden	--	42	154	2	--	43	--	241	1,320
United Kingdom	11	20	8	1	--	8	4	52	530
Other	29	--	4	--	(2)	1	19	53	255
Total	124	270	494	131	14	231	115	1,380	8,150
2004: January-May	837	1,180	2,090	952	98	1,870	1,120	8,150	XX
2003: January-May	715	1,070	2,590	1,550	25	784	854	7,580	XX

²Revised. XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 7
U.S. EXPORTS OF NICKEL ALLOYS, BY COUNTRY¹

(Metric tons, gross weight)

Period and country of destination	Unwrought alloyed ingot	Bars, rods and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date
2003:									
May	857	950	82	295	44	184	256	2,670	11,400
June	180	980	94	521	21	163	280	2,240	13,600
July	750	553	72	223	25	263	216	2,100	15,700
August	708	707	112	344	30	228	201	2,330	18,000
September	597	623	80	281	52	140	271	2,040	20,100
October	206	802	55	396	55	255	253	2,020	22,100
November	274	621	121	382	49	254	208	1,910	24,000
December	379	571	69	350	107	203	199	1,880	25,900
January-December	6,660	7,960	1,190	3,960	661	2,420	3,050	25,900	XX
2004:									
January	522	731	155	366	9	118	231	2,130	2,130
February	543	777	155	343	15	172	299	2,300	4,440
March	980	640	92	491	30	184	333	2,750	7,190
April	283	649	99	472	22	144	303	1,970	9,160
May:									
Australia	(2)	(2)	(2)	2	(2)	1	4	7	107
Belgium	127	235	7	--	--	3	10	382	795
Canada	38	29	14	53	7	28	45	214	1,160
China	(2)	17	2	9	--	2	49	79	494
France	146	106	(2)	18	(2)	2	(2)	272	1,480
Germany	7	50	6	34	11	10	1	119	432
India	--	1	--	4	--	(2)	3	8	42
Ireland	(2)	--	(2)	2	--	--	--	2	11
Italy	41	2	1	5	--	1	1	51	523
Japan	65	58	4	14	20	2	98	261	1,560
Korea, Republic of	2	11	4	66	(2)	3	1	87	523
Mexico	(2)	8	105	15	3	10	87	228	1,180
Netherlands	--	3	(2)	--	--	4	2	9	164
Singapore	1	2	1	(2)	(2)	1	3	8	51
Spain	7	1	--	(2)	1	--	1	10	39
Sweden	--	--	(2)	6	--	(2)	1	7	73
Switzerland	2	1	5	5	1	1	--	15	96
Taiwan	(2)	15	--	21	(2)	1	3	40	197
United Kingdom	13	371	4	31	1	9	14	443	1,710
Other	8	66	15	49	2	41	220	401	1,160
Total	457	976	168	334	46	119	543	2,640	11,800
2004: January-May	2,790	3,770	668	2,010	122	737	1,710	11,800	XX
2003: January-May	3,570	3,100	583	1,460	323	915	1,420	11,400	XX

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 8
NICKEL CONSUMPTION IN CAST AND WROUGHT PRODUCTS

	Percent	
	Wrought	Cast
June 2004:		
Stainless and heat resisting steels	63	37
Alloy steels	99	1
Superalloys	90	10
Copper-nickel alloys	99	1
Other nickel-base alloys	100	(1)

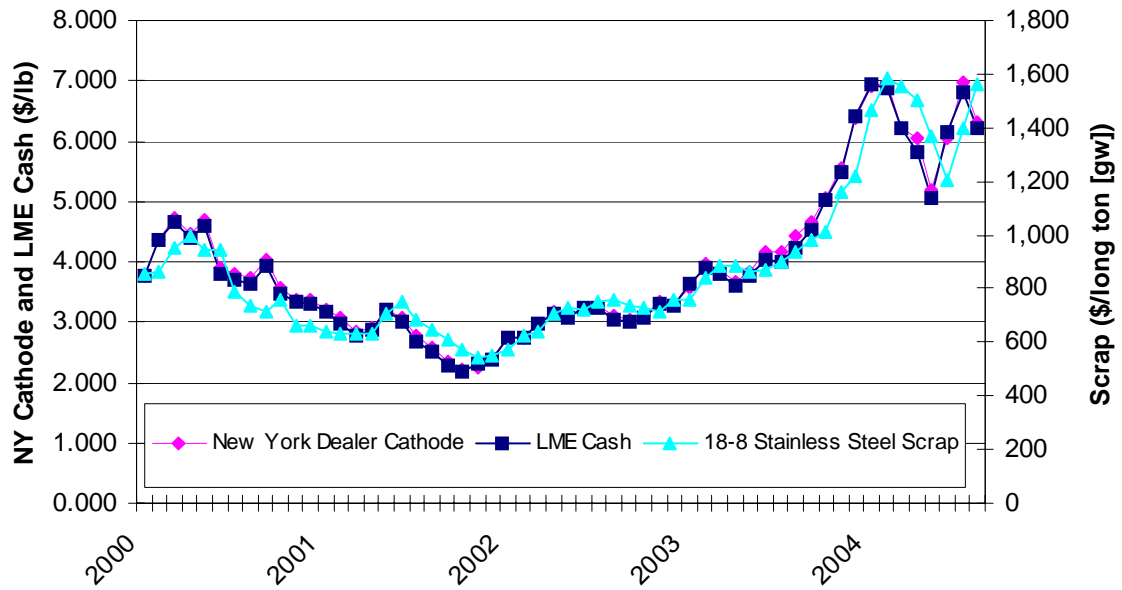
¹Less than 1/2 unit.

TABLE 9
NICKEL PRICES

Date	Platts Metals Week				American Metal Market, 18/8 Stainless steel scrap Pittsburgh
	Cathode NY Dealer \$/lb.	LME Cash mean ¹ \$/t	LME Cash mean ¹ \$/lb.	18/8 Stainless steel scrap Free market \$/long ton (gw)	18/8 Stainless steel scrap \$/long ton (gw)
2003:					
Average for month of:					
June	4.155	8874.762	4.026	874	867
July	4.178	8797.391	3.990	893	897
August	4.418	9,351.375	4.242	918	935
September	4.668	9,965.341	4.520	978	985
October	5.066	11,047.174	5.011	1,041	1,013
November	5.568	12,086.500	5.482	1,153	1,160
December	6.390	14,162.500	6.424	1,262	1,222
Yearly average	4.446	9,629.469	4.368	961	942
2004:					
Average for week ending:					
June 4	5.58-5.99	12,384.375	5.617	1,215-1,240	1,200-1,215
June 11	5.74-5.85	12,339.000	5.597	1,200-1,210	1,200-1,215
June 18	5.99-6.39	13,438.500	6.096	1,200-1,210	1,200-1,215
June 25	6.94-7.22	14,944.500	6.779	1,290-1,360	1,200-1,215
July 2	7.01-7.10	14,945.500	6.779	1,350-1,400	1,440-1,460
July 9	7.18-7.52	15,768.000	7.152	1,375-1,425	1,440-1,460
July 16	7.17-7.45	15,209.000	6.899	1,450-1,465	1,440-1,460
July 23	7.02-7.18	14,867.000	6.744	1,450-1,465	1,440-1,460
July 30	6.57-6.87	14,231.000	6.455	1,450-1,465	1,440-1,460
August 6	6.44-6.67	13,780.500	6.251	1,450-1,465	1,550-1,570
August 13	6.26-6.52	13,522.000	6.133	1,530-1,600	1,550-1,570
August 20	6.27-6.70	14,071.000	6.382	1,425-1,475	1,550-1,570
August 27	6.31-6.74	13,491.000	6.119	1,425-1,475	1,550-1,570
Average for month of:					
January	6.900	15,326.548	6.952	1,517	1,463
February	6.968	15,145.125	6.870	1,537	1,585
March	6.203	13,715.000	6.221	1,458	1,563
April	6.056	12,848.125	5.828	1,397	1,503
May	5.185	11,118.289	5.043	1,281	1,367
June	6.063	13,533.523	6.139	1,241	1,208
July	6.990	15,023.295	6.814	1,430	1,402
August	6.320	13,679.524	6.205	1,481	1,560

¹Mean of the cash buyer price and the cash seller and settlement price.

2000-2004 AVERAGE MONTHLY PRICES
 (Derived from Metals Week and American Metal Market quotations)



2000-2004 STOCKS

